

Remarks

Claims 1-3, 6, 9-21, and 29-31 were pending in the subject application. By this Amendment, claims 1, 6, and 21 have been amended, claims 30 and 31 have been cancelled, and new claims 32-37 have been added. Support for the new claims and amendments can be found throughout the subject specification including, for example, in Examples 1 and 2, and in the claims as originally filed. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 1-3, 6, 9-21, 29, and 32-37 are currently before the Examiner for consideration. Favorable consideration of the pending claims is respectfully requested.

Claims 1-3, 6, 9-21, and 29-31 are rejected under 35 USC §112, second paragraph, as indefinite. The Examiner asserts that the terms used to define oxygen content are indefinite. Applicants respectfully assert that the claims are not indefinite and that the claims do define oxygen content. However, Applicants note that claims 1 and 21, as amended, specifically recites that the zirconium or zirconium alloy contains at least 1010 ppm of oxygen. New independent claims 32 and 37 specify that the oxygen content is sufficient to prevent reaction between the solid electrolyte and the reference material. Claim 33 specifies that the titanium or titanium alloy contains more than 1780 ppm of oxygen. Also, under this rejection, the Examiner asserts that it is indefinite as to how the oxygen amount changes or fluctuates between the bulk oxygen reading at assembly and that of the functioning sensor. Applicants respectfully assert that an ordinarily skilled artisan, having considered the subject specification, would understand that the oxygen content does not change or fluctuate. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §112, second paragraph, is respectfully requested.

Claims 1-3, 6, 9-12, 17-21, 30, and 31 are rejected under 35 USC §102(a) as anticipated by Schwandt *et al.* (2001) and claim 13 is rejected under 35 USC §103(a) as obvious over Schwandt *et al.* (2001) in view of Kiode *et al.* (U.S. Patent No. 5,445,725). In addition, claims 14 and 29 are rejected under 35 USC §103(a) as obvious over Schwandt *et al.* (2001) and Kiode *et al.* (U.S. Patent No. 5,445,725) as evidenced by Ferro (2008), and claims 15 and 16 are rejected under 35 USC §103(a) as obvious over Schwandt *et al.* (2001) and Kiode *et al.* (U.S. Patent No. 5,445,725) in view of Bode (U.S. Patent No. 4,174,258). Applicants respectfully traverse these grounds of rejection.

Applicants respectfully maintain that the cited references, whether taken alone or in combination, do not teach or suggest the claimed invention. As an initial matter, Applicants respectfully assert that the Schwandt *et al.* reference does not constitute an enabling disclosure for purposes of novelty and obviousness under 35 USC §§102 and 103. MPEP §2121.01 states, “The disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation” citing *Elan Pharm., Inc. v. Mayo Found. For Med. Educ. & Research*, 68 USPQ2d 1373 (Fed. Cir. 2003). The disclosure is “enabling” only if it places the public in possession of the claimed invention. *In re Donohue*, 226 USPQ 619 (Fed. Cir. 1985) (“Such possession is effected if one of ordinary skill in the art could have combined the publication’s description of the invention with his own knowledge to make the claimed invention.”). Applicants maintain that the Schwandt *et al.* reference provides no information at all regarding the oxygen content of the reference material and provides very limited information concerning the reference material itself. In fact, there is only very minimal information in the Schwandt *et al.* reference concerning the construction of the reference material or the electrolyte. A person of ordinary skill in the art would not be able to make or use the hydrogen analyzer device of the Schwandt *et al.* reference or the apparatus of the claimed invention. Thus, Applicants respectfully assert that the Schwandt *et al.* reference does not constitute an enabling disclosure that places the public in possession of the claimed invention. The secondary references also cited under the § 103 rejections fail to cure the deficiencies of the Schwandt *et al.* reference. Therefore, Applicants maintain that the Schwandt *et al.* and other references cited in the Office Action do not anticipate or render obvious Applicants’ claimed invention as the references do not constitute enabling disclosures.

Applicants further note that the Schwandt *et al.* reference does not teach or suggest anything concerning a hydrogen analyzer using a reference material of titanium or hafnium. Accordingly, Applicants respectfully assert that the current §102 and §103 rejections are moot with respect to claims that specify that the reference material is titanium or hafnium.

In making the current §102 and §103 rejections, the Examiner asserts that, “it is unclear even to what extent the oxygen content or distribution of the present invention is known...”. Applicants respectfully note that the Examples in the subject specification do specify the oxygen levels of the

titanium, zirconium, and hafnium metals used to make various sensors and do describe the method used to make the sensors. As set out in the paragraphs bridging pages 11-13 of the subject specification, the components of the sensor were assembled at a temperature of around 940C in an alumina tube under pure hydrogen. The hydrogen had been passed through calcium sulphate to remove any traces of moisture and through a metal scrubber to ensure low oxygen content. Thus, the oxygen content of the metal in the assembled sensor would have been the same as the oxygen content of the metal before assembly. Exposure to the hydrogen during the assembly of the sensor would not reduce the oxygen content of these metals. The oxygen content of the reference material cannot have increased because the sensors were sealed under pure hydrogen and measures were taken to ensure that the hydrogen was dry and had a minimal oxygen content. Also, the oxygen level in the reference material could not have been reduced because titanium, zirconium and hafnium are sufficiently reactive to prevent the removal of oxygen by exposure to pure hydrogen at 940C. Consequently, when it is stated in Example 2 of the subject specification that zirconium metal samples having bulk oxygen contents of 1500ppm and 1010ppm were formed into satisfactory sensors, the ordinarily skilled artisan would understand that the oxygen content of the zirconium in the assembled sensor was still 1500ppm or 1010ppm. Example 1 of the subject specification describes an apparatus comprising a reference material which is titanium that contains 1780 ppm or 3600 ppm of oxygen, and an ordinarily skilled artisan would understand that the oxygen content of the titanium in the assembled sensor remained the same.

As the Examiner is aware, in order to support a *prima facie* case of obviousness, a person of ordinary skill in the art must generally find both the suggestion of the claimed invention, and a reasonable expectation of success in making that invention, solely in light of the teachings of the prior art and from the general knowledge in the art. *In re Dow Chemical Co.*, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). One finds neither the suggestion, nor the reasonable expectation of success, of Applicants' claimed invention in the cited references. Accordingly, reconsideration and withdrawal of the rejections under 35 USC §102(a) and 35 USC §103(a) is respectfully requested.

It should be understood that the amendments presented herein have been made solely to expedite prosecution of the subject application to completion and should not be construed as an indication of Applicants' agreement with or acquiescence in the Examiner's position.

In view of the foregoing remarks and amendments to the claims, Applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

Applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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